

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A heat-setting label sheet, which comprises:

(i) a support;

(ii) a pressure sensitive adhesive layer on said support, said pressure sensitive adhesive layer comprising at least one material selected from the group consisting of: (a) a polyester having a glass transition temperature (T_g) of less than 0°C , (b) an acrylic polymer having a glass transition temperature (T_g) of less than 0°C , and (c) a copolymer blend having a glass transition temperature (T_g) of less than 0°C ;

(iii) an Adhesion Layer on said pressure sensitive adhesive layer, said Adhesion Layer comprising at least one material selected from the group consisting of a thermoplastic polymer which melts in the range of $50\text{-}250^{\circ}\text{C}$, a wax which melts in the range of $50\text{-}250^{\circ}\text{C}$, and combinations thereof, wherein the ~~adhesion~~ Adhesion Layer is capable of being removed from the support without heat;

(iv) a first optional opaque layer on said Adhesion Layer;

(v) a second optional opaque layer on said first optional opaque layer (iv), or on said Adhesion Layer; and

(vi) an image receiving layer on said Adhesion Layer, or on said first and/or second optional opaque layers, when present.

2. (Previously Presented) The heat-setting label sheet claim 1, wherein said image receiving layer comprises at least one polymer which is capable of receiving and retaining water base colorants, said image receiving layer either—does not melt when heat is applied or melts at a temperature above the melting temperature of the Adhesion Layer.

3. (Previously Presented) The heat-setting label sheet of claim 1, wherein said image receiving layer does not melt below 200°C.

4. (Withdrawn) The heat-setting label sheet of claim 2, wherein said image receiving layer comprises polyvinyl alcohol, amine polymer, thermoplastic polymer, thermoplastic elastomer, and an antioxidant.

5. (Original) The heat-setting label sheet of claim 1, wherein said pressure sensitive adhesive layer comprises an acrylic polymer adhesive.

6. (Original) The heat-setting label sheet of claim 1, wherein said support is selected from the group consisting of a cellulosic nonwoven web and polyester film.

7. (Original) The heat-setting label sheet of claim 1, wherein said support is a silicone film.

8. (Previously Presented) The heat-setting label sheet of claim 1, wherein barrier layer is placed between the support and the pressure sensitive adhesive layer.

9. (Previously Presented) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises a thermoplastic polymer which melts in a range of from about 65°C to about 180°C.

10. (Withdrawn) The heat-setting label sheet of claim 2, wherein said image receiving layer further comprises an oxidized polyethylene homopolymer.

11. (Previously Presented) The heat-setting label sheet of claim 1, wherein said image receiving layer further comprises an ethylene vinyl acetate copolymer powder.

12. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises a polymeric composition comprising: an acrylic dispersion, an elastomeric emulsion, a water repellent and a plasticizer.

13. (Withdrawn) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises a polymeric composition comprising a film forming binder, an elastomeric emulsion, a water repellent and a plasticizer.

14. (Original) The heat-setting label sheet of claim 12, wherein said acrylic dispersion is an ethylene acrylic acid dispersion, said water repellent is a polyurethane dispersion and said plasticizer is a polyethylene glycol.

15. (Original) The heat-setting label sheet of claim 14, wherein said ethylene acrylic acid dispersion melts in the range of from about 65°C to about 180°C.

16. (Withdrawn) The heat-setting label sheet of claim 13, wherein said elastomeric emulsion has a Tg in the range of from -50°C to 25°C.

17. (Original) The heat-setting label sheet of claim 14, wherein said polyurethane dispersion has a Tg in the range of from -50°C to 25°C.

18. (Original) The heat-setting label sheet of claim 14, wherein said ethylene acrylic acid dispersion is present in an

amount of from 46 to 90 parts by weight; said elastomeric emulsion is present in an amount of from 1 to 45 parts by weight; said polyurethane dispersion is present in an amount of from 1 to 7 parts by weight; and said polyethylene glycol is present in an amount of from 1 to 8 parts by weight.

19. (Original) The heat-setting label sheet of claim 14, wherein said ethylene acrylic acid dispersion is present in an amount of 86 parts by weight; said elastomeric emulsion is present in an amount of 5 parts by weight; said polyurethane dispersion is present in an amount of 4 parts by weight; and said polyethylene glycol is present in an amount of 4 parts by weight.

20. (Original) The heat-setting label sheet of claim 13, which further comprises a polyethylene glycol mono ((tetramethyl butyl) phenol) ester compound.

21. (Withdrawn) The heat-setting label sheet of claim 13, wherein the elastomeric emulsion is selected from the group consisting of polybutadiene, polybutadiene derivatives, polyurethane, polyurethane derivatives, styrene-butadiene, styrene-butadiene-styrene, acrylonitrile-butadiene, acrylonitrile-butadiene-styrene, acrylonitrile-ethylene-styrene, polyacrylates, polychloroprene, ethylene-vinyl acetate and poly (vinyl chloride).

22. (Withdrawn) The heat-setting label sheet of claim 13, wherein the film-forming binder is an acrylic dispersion.

23. (Withdrawn) The heat-setting label sheet of claim 13, wherein said film-forming binder is an acrylic dispersion, said water repellent is polyurethane dispersion and said plasticizer is a polyethylene glycol.

24. (Original) The heat-setting label sheet of claim 14, wherein said acrylic dispersion is an ethylene acrylic acid dispersion.

25. (Withdrawn) The heat-setting label sheet of claim 13, wherein the film-forming binder melts in the range of from about 65°C to about 180°C; said elastomeric emulsion has a Tg in the range of from -50°C to 25°C; and said polyurethane dispersion has a Tg in the range of from -50°C to 25°C.

26. (Withdrawn) The heat-setting label sheet of claim 13, which further comprises a polyethylene glycol.

27. (Withdrawn) The heat-setting label sheet of claim 13, wherein the film-forming binder is present in an amount of from

about 46 to about 90 percent by weight; said elastomeric emulsion is present in an amount of from 1 to about 45 percent by weight; said polyurethane dispersion is present in an amount of from about 1 to about 8 percent; and said Adhesion Layer further comprises polyethylene glycol in an amount of from 1 to about 8 percent by weight.

28. (Withdrawn) The heat-setting label sheet of claim 2, wherein the image receiving layer comprises an ethylene acrylic acid copolymer dispersion.

29. (Withdrawn) The heat-setting label sheet of claim 13, wherein said film-forming binder is present in an amount of 86 percent by weight; said elastomeric emulsion is present in an amount of 5 percent by weight; said polyurethane dispersion is present in an amount of 4 percent; and said polyethylene glycol is present in an amount of 4 percent by weight.

30. (Withdrawn) The heat-setting label sheet of claim 29, wherein said polyethylene glycol comprises a polyethylene glycol mono ((tetramethyl butyl) phenol) ester compound.

31. (Withdrawn) The heat-setting label sheet of claim 13, wherein said elastomeric emulsion is selected from the group

consisting of polybutadiene, polybutadiene derivatives, polyurethane, polyurethane derivatives, styrene-butadiene, styrene-butadiene-styrene, acrylonitrile-butadiene, acrylonitrile-butadiene-styrene, acrylonitrile-ethylene-styrene, polyacrylates, polychloroprene, ethylene-vinyl acetate and poly (vinyl chloride).

32. (Original) The heat-setting label sheet of claim 1, wherein said Adhesion Layer is present in a dry coat amount of from 5 to 30 g/m².

33. (Previously Presented) The heat-setting label sheet of claim 1, wherein said image receiving layer is present in a dry coat amount of from 1.0 to 40 g/m².

34. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises a film-forming binder which melts in the range of from about 65°C to about 180°C; a wax dispersion; and a retention aid.

35. (Original) The heat-setting label sheet of claim 34, wherein the film-forming binder is selected from the group consisting of ethylene-acrylic acid copolymers, polyolefins, and waxes.

36. (Original) The heat-setting label sheet of claim 35, wherein the wax dispersion is selected from the group consisting of natural and synthetic waxes.

37. (Original) The heat-setting label sheet of claim 34, wherein the retention aid is selected from the group consisting of polyvinyl alcohols, polymer latexes and silicates.

38. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer has a melting point of at least 65°C and comprises (i) particles of a thermoplastic polymer having dimensions of about 1 to about 50 micrometers, from about 10 to about 50 weight percent of a film-forming binder, based on the weight of the thermoplastic polymer, and optionally from about 0.2 to about 10 weight percent of a fluid viscosity modifier, based on the weight of the thermoplastic polymer, (ii) about 15 to about 80 percent by weight of a film-forming binder selected from the group consisting of ethylene-acrylic acid copolymers, polyolefins, and waxes and from about 85 to about 20 percent by weight of a powdered thermoplastic polymer selected from the group consisting of polyolefins, polyesters, polyamides, waxes, epoxy polymers, ethylene-acrylic acid copolymers, and ethylenevinyl acetate copolymers, wherein each of said film-forming binder and said

powdered thermoplastic polymer melts in the range of from about 65°C to about 180 degrees Celsius and the powdered thermoplastic polymer consists of particles of about 1 to about 50 micrometers, (iii) a film forming binder selected from the group consisting of ethylene-acrylic acid copolymers having particles of about 1 to about 50 micrometers, polyolefins, and waxes and which melts in the range of from about 65°C to about 180 degrees Celsius, (iv) a thermoplastic polymer having particles of about 1 to about 50 micrometers selected from the group consisting of polyolefins, polyesters, and ethylene-vinyl acetate copolymers and which melts in the range of from about 65 to about 180 degrees Celsius or, (v) a thermoplastic polymer having particles of about 1 to about 50 micrometers selected from the group consisting of polyolefins, polyesters, and ethylene-vinyl acetate copolymers, ethylene-methacrylic acid copolymers, and ethylene-acrylic acid copolymers and which melts in the range of from about 65 to about 180 degrees Celsius.

39. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises particles of a thermoplastic polymer having dimensions of 1 to 20 micrometers.

40. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises particles of a thermoplastic

polymer having dimensions of about 1 to about 20 micrometers, from about 10 to about 50 weight percent of a film-forming binder, based on the weight of the thermoplastic polymer, and optionally from about 0.2 to about 10 weight percent of a fluid viscosity modifier, based on the weight of the thermoplastic polymer.

41. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer melts from about 65 to about 180 degrees Celsius and comprises particles of a thermoplastic polymer having dimensions of about 1 to about 20 micrometers, from about 10 to about 50 weight percent of a film-forming binder, based on the weight of the thermoplastic polymer, and from about 2 to about 20 weight percent of a cationic polymer, based on the weight of the thermoplastic polymer.

42. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises from about 15 to about 80 percent by weight of a film-forming binder selected from the group consisting of ethylene-acrylic acid copolymers, polyolefins, and waxes and from about 85 to about 20 percent by weight of a powdered thermoplastic polymer selected from the group consisting of polyolefins, polyesters, polyamides, waxes, epoxy polymers, ethylene-acrylic acid copolymers, and ethylene-vinyl acetate copolymers, wherein each of said film-forming binder and said

powdered thermoplastic polymer melts in the range of from about 65 to about 180 degrees Celsius and said powdered thermoplastic comprises particles which are from about 1 to about 50 micrometers in diameter.

43. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises a film forming binder selected from the group consisting of ethylene-acrylic acid copolymers having particles of about 1 to 20 micrometers, polyolefins, and waxes and which melts in the range of from about 65 to about 180 degrees Celsius.

44. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises a thermoplastic polymer having particles of about 1 to 20 micrometers selected from the group consisting of polyolefins, polyesters, and ethylene-vinyl acetate copolymers and which melts in the range of from about to about 180 degrees Celsius.

45. (Original) The heat-setting label sheet of claim 1, wherein the Adhesion Layer comprises a thermoplastic polymer having particles of about 1 to 50 micrometers selected from the group consisting of polyolefins, polyesters, and ethylene-vinyl acetate copolymers, ethylene-methacrylic acid copolymers, and

ethylene-acrylic acid copolymers and which melts in the range of from about 65 to about 180 degrees Celsius.

46-57. (Cancelled).

58. (Original) The heat-setting label sheet of claim 1, wherein said Adhesion Layer is present in a dry coat amount of from 5 to 100 g/m².

59. (Previously Presented) A kit comprising the heat-setting label sheet according to claim 1.

60. (Previously Presented) The kit of claim 59, further comprising at least one component selected from the group consisting of markers, paint, crayons, tee-shirts and prep-shirts.

61. (Previously Presented) The kit of claim 59, further comprising a protective film.

62. (Previously Presented) The kit of claim 59, further comprising a sheet of paper.

63. (Previously Presented) A heat-setting label sheet, which comprises:

(i) a support;

(ii) a pressure sensitive adhesive layer on said support, said pressure sensitive adhesive layer comprising at least one material selected from the group consisting of: (a) a polyester having a glass transition temperature (T_g) of less than 0°C , (b) an acrylic polymer having a glass transition temperature (T_g) of less than 0°C , and (c) a copolymer blend having a glass transition temperature (T_g) of less than 0°C ;

(iii) an Adhesion Layer on said pressure sensitive adhesive layer, said Adhesion Layer comprising at least one material selected from the group consisting of a thermoplastic polymer which melts in the range of $50\text{-}250^{\circ}\text{C}$, a wax which melts in the range of $50\text{-}250^{\circ}\text{C}$, and combinations thereof, wherein the adhesion layer is capable of being removed from the support without heat; and

(iv) a first opaque layer on said Adhesion Layer,

a second opaque layer on said Adhesion Layer, or

a first opaque layer and a second opaque layer on said Adhesion Layer.

64. (Previously Presented) The heat-setting label sheet according to claim 63, further comprising an image receiving layer on said first and/or second opaque layer.

65. (Previously Presented) A heat-setting label sheet, comprising:

(i) a support;

(ii) a barrier layer coated on the support, said barrier layer comprising (1) a vinyl acetate with a T_g in the range of -10°C to 100°C ; (2) a thermoplastic polymer having essentially no tack at transfer temperatures, a solubility parameter of at least 19 $(\text{Mpa})^{1/2}$, and a glass transition temperature of at least 0°C , or (3) thermosetting polymers, ultraviolet curing polymers, or combinations thereof;

(iii) an Adhesion Layer coated on the barrier layer and comprising a thermoplastic polymer which melts in the range of $50-250^{\circ}\text{C}$, a wax which melts in the range of $50-250^{\circ}\text{C}$, or combinations thereof, wherein the adhesion layer is capable of being removed from the support without heat; and

(iv) a first opaque layer on said Adhesion Layer,

a second opaque layer on said Adhesion Layer, or

a first opaque layer and a second opaque layer on said Adhesion Layer.

66. (Previously Presented) The heat-setting label sheet of claim 65, wherein the heat-setting label sheet further comprises an image receiving layer on said first and/or second opaque layer.

67. (Previously Presented) The heat-setting label sheet according to claim 66, wherein said image receiving layer comprises at least one polymer which is capable of receiving and retaining water base colorants, wherein said image receiving layer either does not melt when heat is applied or melts at a temperature above the melting temperature of the Adhesion Layer.

68. (Previously Presented) The heat-setting label sheet according to claim 65, wherein said barrier layer comprises (1) a vinyl acetate with a Tg in the range of -10°C to 100°C.

69. (Previously Presented) The heat-setting label sheet according to claim 65, wherein said barrier layer comprises (2) a thermoplastic polymer having essentially no tack at transfer temperatures, a solubility parameter of at least 19 (Mpa)^{1/2}, and a glass transition temperature of at least 0°C.

70. (Previously Presented) The heat-setting label sheet according to claim 65, wherein said barrier layer comprises (3) thermosetting polymers, ultraviolet curing polymers, or combinations thereof.

71. (Previously Presented) The heat-setting label sheet according to claim 1, wherein said first optional opaque layer comprises a styrenebutadiene latex, thermoplastic polymer, elastomer and optional pigment, and said a second optional opaque layer comprises vinyl acetate-ethylene copolymer, thermoplastic elastomer, elastomer and optional pigment.

72. (Previously Presented) The heat-setting label sheet according to claim 63, wherein said first opaque layer comprises a styrenebutadiene latex, thermoplastic polymer, elastomer and optional pigment, and said a second opaque layer comprises vinyl acetate-ethylene copolymer, thermoplastic elastomer, elastomer and optional pigment.

73. (Previously Presented) The heat-setting label sheet according to claim 65, wherein said first opaque layer comprises a styrenebutadiene latex, thermoplastic polymer, elastomer and optional pigment, and said a second opaque layer comprises vinyl acetate-ethylene copolymer, thermoplastic elastomer, elastomer and optional pigment.

74. (Cancelled)

75. (Previously Presented) The heat-setting label sheet according to claim 1, wherein said Adhesion Layer, upon the application of heat, melts and adheres to a receptor element and encapsulates an image applied on the Image Receiving Layer to provide a colorfast image.

76. (Previously Presented) A heat-setting label sheet, which comprises:

(i) a support;

(ii) at least one pressure sensitive adhesive layer on said support, said at least one pressure sensitive adhesive layer comprising at least one material selected from the group consisting of: (a) a polyester having a glass transition temperature (T_g) of less than 0°C , (b) an acrylic polymer having a glass transition temperature (T_g) of less than 0°C , and (c) a copolymer blend having

a glass transition temperature (T_g) of less than 0°C ;

(iii) at least one Adhesion Layer on said pressure sensitive adhesive layer, said at least one Adhesion Layer comprising at least one material selected from the group consisting of a thermoplastic polymer which melts in the range of $50\text{-}250^{\circ}\text{C}$, a wax which melts in the range of $50\text{-}250^{\circ}\text{C}$, and combinations thereof, wherein the at least one adhesion layer is capable of being removed from the support without heat, wherein said at least one Adhesion Layer, upon the application of heat, melts and adheres to a receptor element and encapsulates an image applied thereon to provide a colorfast image.